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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/682,618	09/27/2001	Robert John Filkins	RD-28285	9367

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GENERAL ELECTRIC COMPANY
GLOBAL RESEARCH
PATENT DOCKET RM. BLDG. K1-4A59
NISKAYUNA, NY 12309

EXAMINER	
BUI, BING Q	

ART UNIT	PAPER NUMBER
2642	

DATE MAILED: 07/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/682,618	FILKINS ET AL.	
	Examiner	Art Unit	
	Bing Q. Bui	2642	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 September 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12/27/01*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-38 are pending in the application for examination, wherein claims 1, 35 and 36 being independent.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The terms "about" in line 2 provide an indefiniteness to the recited claim.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-38 are rejected under 35 U.S.C. 102(b) as being anticipated by Gelhard (US Pat No. 4,500,977).

Regarding claim 1, referring to figures 1-4, Gelhard teaches a wireless transceiver (e.g., transmitter-receiver-transducer) for performing ultrasonic measurements, said wireless transceiver comprising:

an uplink transmitter configured to transmit at least one modulated timing pulse signal (e.g., ultranic pulse signal transmitted to an distant obstacle object from the transducer), each modulated timing pulse signal being transmitted over a respective uplink wireless channel (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12);

at least one uplink receiver (e.g., , distant obstacle object receives ultranic pulse signal transmitted from the transducer) each uplink receiver being adapted to receive a respective one of the modulated timing pulse signals from said uplink transmitter and being configured to supply an unmodulated timing pulse signal to a respective transducer (e.g., echo signal or reflected beam reflected back to the transducer; see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12);

at least one downlink transmitter (e.g., echo signal or reflected beam reflected back to the transducer by the obstacle object), each downlink transmitter being adapted to receive an echo signal from the respective transducer, and being configured to extract envelope information from the echo signal and to transmit a modulated echo signal over a respective downlink wireless channel (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12); and

a downlink receiver adapted to receive the modulated echo signals (e.g., echo signal or reflected beam received by the transducer reflected or transmitted back from

the obstacle object),, each modulated echo signal being received from said respective downlink transmitter (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12).

Regarding claim 2, referring to figures 1-4, Gelhard teaches the wireless transceiver of Claim 1 , wherein said uplink transmitter includes a logic level timing pulse ("LLTP") generator configured to generate a timing pulse signal, and at least one uplink modulator, each uplink modulator being configured to modulate the timing pulse signal to produce the respective modulated timing pulse signal (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12).

Regarding claim 3, referring to figures 1-4, Gelhard teaches the wireless transceiver of Claim 2, wherein said LLTP generator includes an uplink limiter configured to rectify an input signal to produce a rectified signal; a filter configured to smooth the rectified signal to produce a smooth signal; and a buffer and amplification unit configured to condition the smooth signal to produce a logic level pulse signal (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12).

Regarding claim 4, referring to figures 1-4, Gelhard teaches the wireless transceiver of Claim 3, wherein said uplink limiter includes a diode clipping circuit, and said filter is a low pass filter and includes a capacitor (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12).

Regarding claim 5, referring to figures 1-4, Gelhard teaches the wireless transceiver of Claim 4, wherein said buffer and amplification unit includes a comparator (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12).

Regarding claim 6, referring to figures 1-4, Gelhard teaches the wireless transceiver of Claim 3, wherein said LLTP generator further includes a synchronizing unit configured to control an on-off cycle of the logic level pulse signal to supply the timing pulse signal (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12).

Regarding claim 7, referring to figures 1-4, Gelhard teaches the wireless transceiver of Claim 6, wherein said synchronizing unit includes a bistable logic device (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12).

Regarding claim 8, referring to figures 1-4, Gelhard teaches the wireless transceiver of Claim 6, wherein said uplink transmitter further includes a pulse signal generator for supplying the input signal (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12).

Regarding claim 9, referring to figures 1-4, Gelhard teaches the wireless transceiver of Claim 8, wherein said pulse signal generator includes a pulser amplifier, and wherein said uplink transmitter further includes an attenuator configured to reduce an amplitude of the input signal (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12).

Regarding claim 10, referring to figures 1-4, Gelhard teaches the wireless transceiver of Claim 2, wherein each uplink receiver includes a timing pulse signal receiver adapted to receive the respective modulated timing pulse signal from said uplink transmitter over the respective uplink wireless channel ; an uplink demodulator configured to demodulate the respective modulated timing pulse signal to produce a demodulated timing pulse signal; and a tone burst generator configured to convert the

demodulated timing pulse signal to a drive tone signal (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12).

Regarding claim 11, referring to figures 1-4, Gelhard teaches the wireless transceiver of Claim 1 0, wherein:

said timing pulse signal receiver includes an antenna (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12); and

said tone burst generator includes:

a tone burst signal generator for supplying a tone burst signal (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12); and

a gate for synchronizing the tone burst signal on the demodulated timing pulse signal (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12).

Regarding claim 12, referring to figures 1-4, Gelhard teaches the wireless transceiver of Claim 1 1 , wherein the tone burst signal has a frequency in a range of 10 kHz to 100 kHz (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12).

Regarding claim 13, referring to figures 1-4, Gelhard teaches the wireless transceiver of Claim 1 0, wherein each uplink receiver further includes a tone burst amplification unit configured to amplify the drive tone signal to supply an amplified drive tone signal (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12).

Regarding claim 14, referring to figures 1-4, Gelhard teaches the wireless transceiver of Claim 1 3, wherein each uplink receiver further includes a step-up transformer configured to step up the amplified drive tone signal to supply a stepped up

drive signal to the respective transducer (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12).

Regarding claim 15, referring to figures 1-4, Gelhard teaches the wireless transceiver of Claim 1 3, wherein each uplink receiver further includes a diplexer configured to turn said tone burst amplification unit on and off (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12).

Regarding claim 16, referring to figures 1-4, Gelhard teaches the wireless transceiver of Claim 1 5, wherein said diplexer includes a series diode pair (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12).

Regarding claim 17, referring to figures 1-4, Gelhard teaches the wireless transceiver of Claim 1 0, wherein each downlink transmitter includes :

a downlink limiter configured to limit an echo signal produced by the respective transducer to supply a limited echo signal (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12);

an envelope information extractor configured to extract the envelope information from the limited echo signal to supply an envelope information signal (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12); and

a downlink modulator configured to modulate the envelope information signal to supply the respective modulated echo signal (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12).

Regarding claim 18, referring to figures 1-4, Gelhard teaches the wireless transceiver of Claim 1 7, wherein said envelope information extractor includes:

an echo amplifier configured to amplify the limited echo signal to supply an amplified echo signal (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12);

an echo mixer configured to mix the amplified echo signal with an envelope signal to supply a mixed echo signal (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12); and

an echo capacitor configured to filter the mixed echo signal to supply the envelope information signal (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12).

Regarding claim 19, referring to figures 1-4, Gelhard teaches the wireless transceiver of Claim 1 8, wherein said downlink limiter includes a resistive element and a pair of back-to-back connected diodes (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12).

Regarding claim 20, referring to figures 1-4, Gelhard teaches the wireless transceiver of Claim 1 7, wherein said downlink receiver includes:

at least one echo signal receiver, each echo signal receiver being adapted to receive the respective modulated echo signal from said respective downlink transmitter over the respective downlink wireless channel (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12);

at least one downlink demodulator, each downlink demodulator being configured to demodulate the respective modulated echo signal to supply a respective demodulated echo signal, wherein said downlink receiver is adapted to supply the demodulated echo signals to a processing unit (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12).

Regarding claim 21, referring to figures 1-4, Gelhard teaches the wireless transceiver of Claim 20, wherein said downlink receiver further includes an end amplification unit configured to amplify each respective demodulated echo signal to supply a respective amplified demodulated echo signal, wherein said downlink receiver is adapted to supply the amplified demodulated echo signals to the processing unit (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12).

Regarding claim 22, referring to figures 1-4, Gelhard teaches the wireless transceiver of Claim 21 , wherein said downlink receiver further includes an isolation coupler for relaying the amplified demodulated echo signals to the processing unit (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12).

Regarding claim 23, referring to figures 1-4, Gelhard teaches the wireless transceiver of Claim 22, wherein said isolation coupler includes a 1 -1 transformer (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12).

As to claims 24 and 34, they are rejected for the same reasons set forth to rejecting claim 11.

Regarding claim 25, referring to figures 1-4, Gelhard teaches the wireless transceiver of Claim 20, wherein each uplink modulator and each respective downlink modulator are configured to employ one of AM, FM, FSK, and CPSK modulation, and each uplink demodulator and each respective downlink demodulator are configured to employ one of AM, FM, FSK, and CPSK demodulation (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12).

Regarding claim 26, referring to figures 1-4, Gelhard teaches the wireless transceiver of Claim 25, wherein each uplink modulator includes:

an uplink carrier signal source for supplying an uplink carrier signal, and a first uplink mixer configured to mix the uplink carrier signal and the timing pulse signal to supply the respective modulated timing pulse signal (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12), and

each respective uplink demodulator includes an uplink signal generator for supplying an uplink demodulating signal; and a second uplink mixer configured to mix the uplink demodulating signal and the respective modulated timing pulse signal to supply the respective demodulated timing pulse signal (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12).

Regarding claim 27, referring to figures 1-4, Gelhard teaches the wireless transceiver of Claim 26, wherein the uplink carrier signal and the first demodulating signal have an uplink frequency in the ISM band (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12).

Regarding claim 28, referring to figures 1-4, Gelhard teaches the wireless transceiver of Claim 26, wherein each downlink modulator includes:

a downlink carrier signal source for supplying a downlink carrier signal, and a first downlink mixer configured to mix the downlink carrier signal and the respective envelope information signal to supply the respective modulated echo signal (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12).

each respective downlink demodulator includes a downlink signal generator for supplying a downlink demodulating signal, and a second downlink mixer configured to mix the downlink demodulating signal and the respective modulated echo signal to supply the respective demodulated echo signal (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12).

As to claims 29, 32 and 38, they are rejected for the same reasons set forth to rejecting claim 27.

Regarding claim 30, referring to figures 1-4, Gelhard teaches the wireless transceiver of Claim 1 7, wherein said downlink receiver includes:

an echo signal receiver adapted to receive the modulated echo signals from said downlink transmitters over the downlink wireless channels (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12);

a tunable downlink demodulator configured to demodulate the modulated echo signals to supply a plurality of demodulated echo signals (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12);

wherein said downlink receiver is adapted to supply the demodulated echo signals to a processing unit (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12).

Regarding claim 31, referring to figures 1-4, Gelhard teaches the wireless transceiver of Claim 30, wherein said tunable downlink demodulator includes a tunable oscillator configured to supply a plurality of downlink carrier signals; and a mixer configured to mix each of the modulated echo signals with a respective one of the

downlink carrier signals to supply a plurality of demodulated echo signals (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12).

Regarding claim 33, referring to figures 1-4, Gelhard teaches the wireless transceiver of Claim 31 , wherein said downlink receiver further includes an end amplification unit configured to amplià the demodulated echo signals to supply a plurality of amplified demodulated echo signals, wherein said downlink receiver is adapted to supply the amplified demodulated echo signals to the processing unit (see Abstract; Figs 1-4; and col. 11, ln 22-col. 13, ln 12).

As to claims 35 and 36, they are rejected for the same reasons set forth to rejecting claim 1.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patents are cited to further show the state of the art in general:

U.S. Pat. No. 5,440,937

U.S. Pat. No. 6,158,288

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bing Bui whose telephone number is (571) 272-7482. The examiner can normally be reached on Monday through Thursday from 7:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ahmad Matar, can be reached on (571) 272-7488. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306 and for formal communications intended for entry (please label the response □EXPEDITED PROCEDURE□) or for informal or draft communications not intended for entry (please label the response "PROPOSED" or "DRAFT").

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.

24 June 2005

BING Q. BUI
PRIMARY EXAMINER